hourly and bihourly observations give valuable data for determining the corrections needed to reduce miscellaneous hours of observation to the normal mean.

The Report for 1896 appears in two volumes and has more than twice the bulk of that for 1895. During this year there were more than three hundred stations of observation, classified as follows: Chief stations, 8; telegraph reporting stations, 30; ordinary first-class, 17; ordinary second-class, 177; ordinary third-class, 68; sunshine stations, 14. Of course, some stations fall into two categories. At the chief stations, the telegraph stations, and a few of the special stations the observers are paid for their time, but at the great bulk of the stations the work is purely voluntary, and the thanks of the public are due to those who, in the interest of their country and of science, devote their time gratuitously to the work. There are thirty telegraph stations whose reports are received in Toronto before 9:30 a. m., and which, combined with fifty-four reports received by exchange from the United States, enable the director at Toronto to issue maps and forecasts similar to those that are published at Washington. There are sixty-seven storm signal stations, thirty-two of which are on the Great Lakes. The daily forecasts are disseminated to agricultural communities and the general public promptly and widely.

The second volume of the Report for 1896 is occupied by Part V, which part does not appear in the report for 1895. This large volume is wholly occupied with minute details of the results of observations at the chief stations during the year 1896. There are eight chief stations, viz: Esquimault, B. C.; Winnipeg, Man.; Toronto, Ont.; Woodstock, Ont.; Montreal, Que.; Fredericton and St. John, N. B., and Halifax, N. S. For each of these stations the Report gives for each hour and day the complete record of the pressure, temperature, vapor pressure, relative humidity, cloudiness of the sky, the dry air pressure, the wet-bulb thermometer, and the dew-point. The whole record occupies 500 quarto pages and responds very closely to the requests of the International Meteorological Conference for the publication of detailed records at a few stations. It is a noble contribution of data needed for the study of climatology in its relation to every matter that interests civilized humanity.

THE ANNUAL SUMMARIES OF THE CLIMATE AND CROP SERVICE.

In looking over the annual summaries for 1898 of thirty-seven different sections of the Climate and Crop Service of the Weather Bureau, which are all that have been received up to date, one can but be impressed with the great mass of popular and valuable climatological data thus published in detail. Each summary consists of about five pages of numerical tables, three charts, and from three to seven pages of text. These summaries alone, without the accompanying monthly section reports, will when bound up together, present the general climatic conditions of the year in a form appropriate for many interesting studies into the relations between the climate on the one hand, and the agriculture, forestry, transportation, hygiene, and other important matters.

We notice a very few cases in which the respective section directors have added to these summaries some special study. As the section directors have frequently been encouraged by the Chief of Bureau to publish special memoirs in each annual summary, it may be possible that other papers will be found in the summaries that have not yet been received, viz, those for Michigan and North Dakota.

Mr. E. A. Evans, as section director for Virginia, has compiled a very instructive article on the physical features and flood conditions of the James River Valley, illustrated by hydrographs for Lynchburg and Richmond. This study is especially in line with the investigations now being carried on by the United States Geological Survey.

For California, Mr. McAdie gives a suggestive article by Mr. A. H. Bell, Weather Bureau observer, on the weather conditions along the coast of northern California. For Florida, Mr. A. J. Mitchell gives an instructive chart, showing the limit of freezing temperatures. For Georgia, Mr. J. B. Marbury reprints a short article by Mr. John Hyde, Statistician. For Kansas, Mr. T. B. Jennings reprints a portion of the annual snowfall bulletin of the Colorado section, also an annual summary for the University of Kansas. For Missouri, Mr. A. E. Hackett reprints a portion of Professor Hammon's bulletin on frost prevention. For Nebraska, Mr. G. A. Loveland gives a small chart of the distribution of snowfall during the year 1898. (Is the total annual snowfall for the first and last months of a calendar year as important to agriculture as the total for the four or five months of consecutive cold during one winter?)

For Maryland and Delaware, Mr. F. J. Walz gives diagrammatic curves, showing the relation between monthly normal temperatures or rainfall and the corresponding actual curves for the year, that are very instructive. The prevailing warmth of January, February, and March, the coldness of April, the warmth of the growing season, May 15 to October 15, and the coldness of November and December stand out very clearly.

Among these annual summaries we notice that those for Maryland, Iowa, New Jersey, and New York differ somewhat from other reports, possibly because published partly at the expense of the respective States. Iowa, in fact, compresses its annual summary into a single table appended to the monthly report for December. The annual summaries for Michigan, Nevada, New Jersey, and North Dakota have hitherto usually appeared as octavo pamphlets, but would it not in some cases be practicable, after printing off the octavo edition and before the type is distributed, to arrange the tables in a form appropriate to the quarto page and print a small edition for binding up with the monthly reports?

THE CLIMATE ADAPTED TO TOBACCO.

In the report of the Virginia section for May, Mr. E. A. Evans, Section Director, gives a summary of our knowledge of the soil and climate adapted to raising tobacco. So far as climate is concerned, tobacco raising is profitable over a very wide extent of territory throughout the world. The range of climate that is found in the United States by no means exhausts the adaptability of the plant; in fact, with tobacco it is as much a question of soil as of climate. The climatic peculiarities of the regions in which the best tobacco is grown are not especially dwelt upon by Mr. Evans, but would make an interesting subject for study. The cultivated plant is evidently more susceptible to weather than the native tobacco of Virginia, and is, probably, the descendant of some variety imported by the early settlers, so that both soil and climate must be adapted to it. In general, the agriculturist labors to overcome the natural climate of any spot, and his resulting crop represents not the plant, or the soil, or the climate, but the intelligence of the skilled labor.

We hardly know how one should proceed in order to obtain botanical or agricultural material for a fair comparison between different climates as to their effect upon any given plant. The question of the relation between climate and crop belongs to the Division of Soils even more than to the Weather Bureau, since the meteorological climate must be considered in connection with the underground conditions. The roots have one climate, the leaves and the fruit have another; the crop results from a combination of both, with a very large admixture of agricultural skill.